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AN ANALYSIS OF FACTORS ASSOCIATED WITH INFORMAL READING TESTS AT THE EIGHTH GRADE LEVEL.

BY- KENDER, JOSEPH P.

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DESCRIPTORS- *READING TESTS, *GRADE 8, *INFORMAL READING INVENTORY, *READING COMPREHENSION, *READING RESEARCH, READING LEVEL, SILENT READING, ORAL READING, TEST VALIDITY, INNER SPEECH (SUBVOCAL),

FACTORS PERTAINING TO INFORMAL READING TESTS WERE ANALYZED. SUBJECTS WERE 100 EIGHTH GRADERS IN A JUNIOR HIGH SCHOOL. THE MEDIAN NONVERBAL INTELLIGENCE TEST SCORE FOR THE GROUP WAS 116.37. THREE INFORMAL READING TESTS WERE ADMINISTERED -- THE INFORMAL READING INVENTORY, THE EXPERIMENTAL READING INVENTORY, AND THE BOTEL READING INVENTORY. THE GRADED TEXTS WERE READ SILENTLY AND ORALLY, AND COMPREHENSION WAS CHECKED AFTER EACH READING. CRITERIA WERE USED FOR SCORING AS PRESCRIBED BY KILGALLON AND COOPER. ANALYSIS OF VARIANCE, CORRELATION, AND Z RATIOS WERE USED TO ANALYZE THE DATA. RESULTS INDICATED THAT THE DIFFERENCES AMONG THE MEAN INSTRUCTIONAL LEVELS OF THE THREE TESTS WERE SIGNIFICANT EXCEPT BETWEEN THE INFORMAL INVENTORY AND THE EXPERIMENTAL INVENTORY. CORRELATIONS AMONG THE INSTRUCTIONAL LEVELS OF THE THREE TESTS WERE ALL POSITIVE AND HIGH. WHEN THE EXPERIMENTAL INVENTORY WAS SCORED BY BOTH THE KILGALLON AND COOPER CRITERIA, THE DIFFERENCE OBTAINED WAS SIGNIFICANT. THERE WAS A SIGNIFICANT DIFFERENCE BETWEEN SILENT AND ORAL READING COMPREHENSION. READING PERFORMANCE WAS ADEQUATE DESPITE VOCALIZING FOR GOOD READERS AND POOR READERS. ADDITIONAL RESULTS, CONCLUSIONS, AND REFERENCES ARE PRESENTED. THIS PAPER WAS PRESENTED AT THE INTERNATIONAL READING ASSOCIATION CONFERENCE (BOSTON, APRIL 24-27, 1968). (BK)

Joseph P. Kender
Associate Examiner
Educational Testing Service

U. S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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Introduction

There is general agreement among many reading authorities that informal reading tests are valid tools for evaluating the performance of students to insure their proper placement in reading materials for instructional purposes. Furthermore, there is evidence based on studies by Betts (2), Botel (3), Cooper (5), Killgallon (12), and Sipay (16), among others, that informal tests constructed from functional materials are more accurate than standardized tests, at least insofar as informal tests are used to place students in reading materials for instructional purposes. But here the agreement ends. The literature pertaining to the construction and scoring of informal reading tests is conflicting. There are informal

reading tests that consist of a series of graded oral and silent reading passages; others that consist only of oral reading passages; still others composed of graded word lists; and even some constructed from sentence samples. All of these instruments purport to do the same thing--that is, measure the instructional levels of children.

The lack of agreement over which criteria to use for scoring an informal reading test is even more confusing. There is disagreement about what constitutes an acceptable performance in terms of oral reading and comprehension. For example, there is disagreement over whether all types of oral reading errors should be counted or whether only significant errors should be counted. Some feel that understanding 90 per cent of the material is necessary at the instructional level; others feel that 75 per cent is adequate; while others contend that only 60 or 50 per cent is necessary--and on it goes.

Perhaps much of the disagreement results from the relative absence of research in this area. At the time that this study was conducted, the investigator found only two experimental studies devoted to the topic, and these have obvious shortcomings. The first was Killgallon's study upon which at least a part of Betts' criteria for scoring an informal reading test is based. Killgallon set up apriori criteria for scoring an informal reading test; he tested his students and analyzed their performance on the basis of his apriori criteria and then derived a new set of criteria. He found, for example, that the most suitable percentage of accuracy for acceptable pronunciation at the instructional level was 95 per cent.

The second study was Cooper's in which he attempted to establish suitable criteria for scoring an informal reading test. Although his study was conducted in a more scientific manner, the relatively small sample that he used and the limited geographic and socioeconomic groups that were represented make the application of these criteria to other pupils in other places somewhat questionable.

In light of the issues discussed above, this study attempted to investigate several factors that pertain to informal reading tests. Specifically this study intended to do the following:

(1) determine how closely the instructional levels yielded by three different informal reading tests agreed when the tests were administered to a group of eighth grade students

(2) determine how closely the instructional levels assigned by Killgallon's criteria and Cooper's criteria for scoring an informal reading test agreed when these criteria were applied to the reading performance of a group of eighth grade students

(3) test the contention that asking questions after oral reading-at-sight resulted in poor comprehension scores because of the students' preoccupation with word recognition

(4) determine what differences would occur between the instructional levels of eighth grade students if their instructional levels were assigned by two methods: first, on the basis of oral reading and comprehension scores; and second, on the basis of oral reading performance alone.

(5) ascertain whether or not the presence of vocalizing can be considered reason enough to assign lower instructional levels to eighth grade students.

Definition of Terms

The following terms are considered essential:

Informal Reading Test - An informal reading test is one which evaluates an individual's performance in reference to his own ability in contrast to the standardized test which compares the individual's performance to the performance of others. Such a test is constructed from functional materials and can be published or unpublished. An informal reading test yields information concerning the level at which a student can read independent of instruction, the level at which he can profit

from instruction, and the highest level at which he can understand when someone reads or talks to him. In addition, an informal reading test yields information concerning a student's particular strengths and weaknesses as they are related to his total reading ability.

Instructional Level - Instructional level identifies the highest reading level at which a student can be profitably instructed. Although the student might exhibit difficulties at this level, these would not be prohibitive to growth and progress. Three different sets of criteria for establishing instructional level were used in this study. The Informal Reading Inventory was scored by the Killgallon criteria; the Experimental Reading Inventory was scored by the Cooper criteria; and the Botel Reading Inventory was scored by the Botel criteria.

Vocalizing - Vocalizing refers to moving the lips as one reads silently or actually saying the words aloud while supposedly reading silently. The intensity of the vocalizing can vary, usually increasing as the material becomes more difficult.

Procedures

Data were obtained by testing a total of 100 eighth grade students, 53 boys and 47 girls, in a junior high school from an area that included both a suburban and rural population. All the subjects were native born, and the majority came from middle class homes. Only a few can be said to have been materially underprivileged. Socioeconomic information was obtained mainly from student personnel folders. The median IQ of the group which was obtained from the Lorge-Thorndike Intelligence Test, Nonverbal, Form A, Level 4, was 116.37. The IQ scores ranged from 91 to 141.

In addition to the intelligence test, three informal reading tests were administered to the students. These tests were the Informal Reading Inventory, the Experimental Reading Inventory, and the Botel Reading Inventory.

The title Informal Reading Inventory, in this case, refers to a particular instrument and is not used in its generic sense. In reality, all three reading

tests used in the study are "informal reading inventories" generically speaking. This test was selected because it was the test used by Killgallon in his study from which at least part of Betts' criteria for scoring an informal reading test evolved. In a sense, it has historical significance.

The test was designed to diagnose the reading performance of an individual in which the subject was required to read oral and silent passages selected from a series of graded reading texts in response to definite purposes. Errors and inadequacies were recorded on a detailed checklist or directly on the test as the individual read. Comprehension after oral reading and comprehension after silent reading was checked after each passage at each level.

Criteria for Scoring the Inventory - The criteria for scoring the Informal Reading Inventory as prescribed by Killgallon were as follows:

> (1) A score of 50 per cent in comprehension was considered minimum in assigning an instructional level. This standard was adhered to regardless of the excellence of the reading performance in other respects.
>
> (2) The maximum ratio of word-perception errors to number of running words allowed on the instructional level was one to fourteen. In other words, no pupil was assigned any level upon which his oral performance was characterized by more than 7 per cent error in word-recognition.
>
> (3) Excessive lateral head movement, finger pointing and various forms of vocalization during silent reading were interpreted as indicating undue difficulty when two or more appeared in conjunction with low comprehension or a high error ratio. Accordingly, no pupil was assigned a level upon which he failed to score 75 per cent or higher in comprehension or exceeded the ratio of one word-perception error to each fifteen running words.
>
> (4) Clearly inadequate word calling is usually an expression of a lack of understanding of the material read. Oral reading performance characterized by lack of emphasis upon meaning, inadequate phrasing, or word-by-word reading was considered sufficient justification for assigning a lower instructional level unless comprehension was 75 per cent or above. (12)

In addition, Killgallon specified a list of word recognition errors and symptoms of difficulty.

Word recognition errors included guessing, omissions, substitutions, insertions, repetitions, reversals, initial and final consonant errors, and errors of

syllabication.

Symptoms of difficulty included poor posture, emotional reactions, poor voice control, speech defects, ignoring punctuation, and word calling.

Silent reading difficulties included poor posture, vocalization, finger pointing, lateral head movement, limited vocabulary, lack of comprehension and versatility, and slow speed of comprehension. (12)

The Experimental Reading Inventory is a test constructed by the investigator for use in this study. More specifically, it was developed as a vehicle upon which the author could apply Cooper's criteria for scoring an informal reading test. It consists of a series of graded passages from levels one through twelve. Special care was given to readability to insure that each succeeding passage was more difficult than the preceding passage. The Spache and Dale-Chall formulas were used to check readability. Two selections, one oral and one silent, were taken from the appropriate book for each level. As in the case of the Informal Reading Inventory, each student was required to read both the oral and silent passages and answer questions based upon questions following each passage.

Criteria for Scoring the Inventory - The investigator used criteria for scoring the Experimental Reading Inventory which were prescribed by Cooper as follows:

Criteria for primary grades - Oral reading characterized by:

A. Accurate pronounciation of ninety-eight per cent of the running words, or not more than one unknown word in fifty running words. (Materials in which pupils make 2-6 word perception errors per 100 running words are of questionable difficulty, and more than 6 are definitely unsuitable.

B. A comprehension score of at least seventy per cent based on questions in the IRI.

C. Freedom from any noticeable degree of the following symptoms:
   1. Word-by-word reading
   2. Inadequate phrasing
   3. Repetitions
   4. Inattention to punctuation
   5. Strained, high pitched voice
   6. Slow and halting reading

7. Marked insecurity and tension movements
8. Finger pointing
9. Holding book too close

Criteria for intermediate grades - Oral reading characterized by:

A. Accurate pronunciation of ninety-six per cent of the running words, or not more than four (4) unknown words in 100 running words. (Materials in which pupils make 4-10 word perception errors per 100 running words are of questionable suitability and the upper limits of this range are extremely questionable. Materials in which more than 10 word perception errors per 100 running words are made is definitely unsuitable.)

B. A comprehension score of at least sixty per cent based on factual and inferential questions. (The reason a lower comprehension score is accepted for intermediate grade pupils than for primary grade pupils is that there is much more to comprehend in intermediate materials, whereas in the primary materials most of the concepts are extremely simple even for younger children.)

C. Freedom from any noticeable degree of the symptoms mentioned above. (5)

Cooper allowed a lower minimum score both in word recognition and in comprehension for material of questionable suitability. The investigator used only the higher minimums which were designated for materials of suitable difficulty. In addition, Cooper noted that regardless of the grade level to which a pupil may be assigned, the criteria for the level of the material being appraised should be utilized. (5) The investigator followed this prescription.

The third reading test used in the study was the Botel Reading Inventory, a published test developed for the purpose of obtaining basic estimates of word recognition, comprehension, and instructional level. This test differs in construction from the two tests mentioned above in that the first two tests consist of a series of graded passages and the Botel Reading Inventory consists of a series of word lists from the pre-primer through the fourth reader level as well as a series of multiple-choice tests of word meaning from the first reader level through the senior high level. It was selected for use in the study because the investigator wanted to determine how closely the instructional levels yielded

by a word list test agreed with the instructional levels yielded by tests constructed from oral and silent reading passages.

Criteria for Scoring the Test - The criterion for scoring the Word Recognition Test at the instructional level as prescribed by Botel is as follows:

> . . . that the pupil can recognize and pronounce 70-90 per cent of the words. . .
>
> Since there are 20 words at each level, count five points for each error. The types of error are:
>
> 1. mispronunciation. . .
> 2. substitution. . .
> 3. refusal
>
> Words corrected by a pupil and hesitations up to five seconds are not considered as errors. However, more than several such responses at any level are indicative of insecurity and should be taken into consideration when establishing the pupil's reading level.

The criterion for scoring the Word Opposite Test is simply that the pupils, ". . .can comprehend 70-80 per cent of the words. ." (3)

The Lorge-Thorndike Intelligence Test, Nonverbal, Form A, Level 4, is a published standardized test designed to provide an intelligence estimate which is not influenced by the student's ability to read. The test consists of three subtests which measure a student's ability to manipulate material of a nonverbal nature. It was selected because the investigator wanted an intelligence estimate which was not influenced by the student's ability to read because some of the students in the study were retarded readers.

The testing was divided into six two-week periods, the longest time elapsing for any given student between the times he took the first and the last test in the battery being 7 days. In every case the Word Recognition Test of the Botel Reading Inventory was administered first followed by either the Informal Reading Inventory or the Experimental Reading Inventory. The order of the Informal Reading Inventory and the Experimental Reading Inventory alternated so that fifty per cent of the students received one test first and fifty per cent received the other test first.

The Word Opposites Test of the Botel Reading Inventory and the Lorge Thorndike Intelligence Test were administered to the students in group situations.

The informal reading tests were scored in conformity with conventional practi that is, scores denote percentage of correct responses. In order to test the diff ences among three or more means, as was the case in some instances, analysis of variance techniques were used In cases involving only two means, the z ratio tes was used. In order to determine the probability that the observed differences between the means did not occur by chance, null hypotheses were rejected at the .0 level of significance.

Findings

The first hypothesis that there are no significant differences among the mean instructional levels yielded by the three tests scored by their respective criteri was rejected. The mean instructional level of the Informal Reading Inventory was 7.41; the mean instructional level of the Experimental Reading Inventory was 7.05 and the mean instructional level of the Botel Reading Level was 8.15.

The analysis of variance test revealed that the differences among the mean instructional levels of the three tests were significant beyond the .01 level. The analysis of variance, however, did not indicate that each mean differed from the rest or that some were undifferentiated. This study used the Tukey test which is used to test the significance of differences between any pairs of means. The Tukey test indicated that the difference between the means of the Informal Reading Inventory and the Botel Reading Inventory was significant beyond the .01 level. In addition, it revealed that the difference between the Experimental Reading Inventory and the Botel Reading Inventory was significant beyond the .01 level. Finally, it indicated that the difference between the means of the Informal Reading Inventory and the Experimental Reading Inventory was not significant at the .01 level. This fact is surprising when one considers the differences between the two tests in terms of materials, range of reader levels, and criteria for scoring the tests.

But these seeming similarities between the instructional level are more apparent than real. When one examines the differences among the instructional levels for individuals, it is evident that the mean scores obscured the magnitude of the differences especially for the poor readers. This factor has important implications and will be discussed more fully later.

Correlations among the instructional levels of the three tests were all positive and high. In addition, all correlations were significant at the .01 level. The highest correlation of .81 was found between the Informal Reading Inventory and the Experimental Reading Inventory. The lowest correlation of .56 was found between the Experimental Reading Inventory and the Botel Reading Inventory. The correlation between the Informal Reading Inventory and the Botel Reading Inventory was .57.

The second purpose of the study was to determine if there were any differences between the instructional levels of a group of eighth grade students when the Killgallon criteria and the Cooper criteria were applied to only one informal reading test. The investigator selected the Experimental Reading Inventory rather than the Informal Reading Inventory to test the two sets of criteria principally because of the manner in which readability was controlled in the Experimental Reading Inventory.

The Botel criteria were omitted from this part of the study because they apply only to an informal reading test which consists of a series of graded word lists. Consequently, they could not be applied to the Experimental Reading Inventory.

The hypothesis that there is no significant difference between the mean instructional level yielded by the Experimental Reading Inventory as scored by the Killgallon criteria and as scored by the Cooper criteria was rejected. The test scored by the Killgallon criteria yielded a mean score of 7.48. When the test was scored by the Cooper criteria, it yielded a mean score of 7.05, a difference of only .43, but a significant one as shown by the application of the z test which yielded a critical ratio of 7.17.

An extremely high positive correlation of .94 was found between the instructional levels. The correlation was surprisingly high considering the differences in the criteria used to score the test. However, it seems that most students tended to obtain word recognition and comprehension scores which clustered in the middle ranges of the distributions. These scores tended to counteract the differences at the lower ranges where the real numerical differences between the sets of criteria occurred. In other words, the scores tended to regress toward their respective means rather than toward the extremes stipulated by the two sets of criteria.

The third purpose of this study was to test the contention that asking comprehension questions after oral reading-at-sight yielded answers that were invalid indicators of comprehension. Some investigators have reported that asking questions after oral reading-at-sight was not a fair measure of a student's comprehension because the student was preoccupied with pronunciation and could not direct his full attention to meaning. Their argument implies that comprehension should be better when one reads silently or has the opportunity to read the material before he reads aloud. This study attempted to provide an answer by comparing comprehension after oral reading-at-sight with comprehension after silent reading to determine what difference, if any, would occur between the mean comprehension score after oral reading and the mean comprehension score after silent reading. Only the Informal Reading Inventory and the Experimental Reading Inventory were used in investigating this aspect of the problem because it was necessary to obtain comprehension scores based on oral and silent reading passages. The Botel test was omitted because it consists of word lists and multiple-choice vocabulary measures.

The hypothesis that there is no significant difference between the mean percentage of comprehension after oral reading and the mean percentage of comprehension after silent reading yielded by the Informal Reading Inventory was rejected. The

mean comprehension after oral reading was 80.34 while the mean comprehension after silent reading was 75.17. The z test yielded a critical ratio of 2.94 which indicated that the difference between the means was significant beyond the .01 level. A low positive correlation of .28 which was not significant was found between comprehension after oral reading and comprehension after silent reading.

The hypothesis that there is no significant difference between the mean percentage of comprehension after oral reading and the mean percentage of comprehension after silent reading yielded by the Experimental Reading Inventory was accepted. As in the case of the Informal Reading Inventory, the mean comprehension score after oral reading was greater than the mean comprehension score after silent reading. The score for oral reading was 78.28 per cent, while the score for silent reading was 75.26 per cent. The z test yielded a critical ratio of 2.24 which indicated that the difference between the means was not significant at the .01 level. A correlation of .38 which was significant at the .01 level was found between the mean percentages of comprehension after oral reading and silent reading.

A fourth purpose of the study was to determine what mean differences would occur between the instructional levels of the students if the instructional levels were assigned by two methods: first, on the basis of oral reading and comprehension scores; second, on the basis of oral reading alone. Again, only the Informal Reading Inventory and the Experimental Reading Inventory were used in investigating this aspect of the study.

The hypothesis that there is no significant difference between the mean instructional levels yielded by the Informal Reading Inventory when employing oral reading scores and comprehension scores as criteria of instructional level and when employing oral reading scores alone as the criterion of instructional level was rejected. The mean instructional level when oral reading and comprehension were used as criteria was 7.56, while the mean instructional level when oral reading was used as the sole criterion was 7.89. The z test indicated that the

difference between the means was significant beyond the .01 level.

The hypothesis stated above was also tested on the Experimental Reading Inventory. Here too, it was rejected. The mean instructional level when oral reading and comprehension were used was 7.05, while the mean instructional level when oral reading was the sole criterion was 8.47.

On both tests, then, students were able to achieve higher scores when oral reading was considered as the sole criterion. On the average, the students performed better in terms of reading orally than in terms of comprehending what they read.

Finally, there is the matter of vocalizing. Vocalizing as defined above refers to moving the lips as one reads silently or it refers to actually saying the words aloud while supposedly reading silently. The intensity of the vocalizing can vary, usually increasing as the material become more difficult. It must be noted that none of the students who were observed vocalizing at the instructional level did so beyond a subdued whisper.

Evidence of vocalizing was obtained from performances on the Informal Reading Inventory and on the Experimental Reading Inventory. Forty-four per cent of the students tested on the Informal Reading Inventory and 38 per cent of the students tested on the Experimental Reading Inventory manifested some type of vocalizing at their instructional levels. In other words, their reading performances in all other aspects were adequate despite their vocalizing This was true both for good readers as well as for poor readers. Approximately 7 per cent of those who vocalized on both tests were academically superior students. Their scholastic superiority was supported by their grades and by anecdotal records prepared by their teachers.

Conclusions

The following conclusions can be drawn on the basis of the analysis of the data in the investigation:

(1) However useful informal reading tests may be, a fact that has been clearly demonstrated by this study is that there were inconsistent results among individual

instructional levels despite relative agreement among the mean instructional levels. The magnitude of the differences, especially for the poorest readers where the greatest accuracy is probably required, is conspicuous. It is evident, then, that placement of a student in one set of reading materials may not mean identical placement in another set of reading materials. Whenever possible passages used in an inventory aimed at determining placement should be drawn from reading materials in which the student is going to be instructed. If materials other than those to be used for instruction are employed, the results must be regarded as only highly tentative.

(2) The extremely high correlation between the instructional levels assigned by the Killgallon criteria and the Cooper criteria indicates that an examiner can probably use either criteria with very similar results. However, it is difficult to recommend either criteria as completely definitive. This is so because both are subject to some question either as to how they were derived or to their limited applicability based on insufficient normative data.

(3) The contention that one should not check comprehension after oral reading because of a student's preoccupation with pronunciation is not supported by the data. It must be noted, however, that these scores were recorded at the students' instructional levels where the incidence of difficulty with word recognition is by necessity limited. In addition, the testing situation from which these findings were obtained was a one-to-one clinical situation. In a classroom, the student is faced with an audience with a possible threat of disapproval from his peers or his teacher if he makes a mistake. These factors might militate against good comprehension after oral reading.

(4) The data indicated that the mean instructional level of the students was higher when instructional level was based only on oral reading than when it was based on oral reading and comprehension. This would seem to indicate that on the average the students were able to pronounce words accurately beyond a given level,

even though they did not know what the passages meant. This finding might serve as a caution to anyone who assumes that students understand concepts simply because they can glibly pronounce words or perform adequately when called upon to read orally.

(5) Finally, the contention that vocalizing during silent reading is reason enough to assign a lower instructional level is not supported by the data. The fact that 44 per cent of the students on one test and 38 per cent of the students on the other test manifested some type of vocalizing at levels where they were able to meet all of the required standards for an acceptable reading performance casts some doubt upon the significance of vocalizing as a criterion in analyzing reading performance.

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